CLAIMS

What is claimed is:

1. A variable capacity rotary compressor, comprising:

a partition plate;

a housing installed in a hermetic casing, to define first and second compression chambers therein which are partitioned by the partition plate;

first and second flanges mounted to predetermined positions of the first and second compression chambers, to close openings of the first and second compression chambers, respectively;

a rotating shaft to pass through the first and second compression chambers and the partition plate;

first and second eccentric units mounted to the rotating shaft, to be placed in the first and second compression chambers, respectively, one of the first and second eccentric units being eccentric from the rotating shaft to execute a compression operation while a remaining one of the first and second eccentric units is released from eccentricity from the rotating shaft to execute an idle rotation according to a rotating direction of the rotating shaft, the first and second eccentric units being oppositely operated; and

first and second rollers to fit over the first and second eccentric units, respectively, with inside portions of ends of the first and second rollers being spaced apart from inside surfaces of the first and second flanges, respectively, offsetting pressure applied to the ends of the first and second rollers.

2. The rotary compressor according to claim 1, further comprising:

an annular depression provided on the inside surface of each of the first and second flanges, allowing the first and second flanges to be spaced apart from the ends of the first and second rollers.

3. The rotary compressor according to claim 2, wherein the partition plate comprises:

a through hole at a center thereof, and having a larger diameter than the rotating shaft, to allow the rotating shaft to pass through the partition plate, wherein

the annular depression has an inner diameter equal to an inner diameter of the through hole.

4. The rotary compressor according to claim 1, wherein the first and second eccentric units comprise:

first and second eccentric cams mounted to an outer surface of the rotating shaft to be placed in the first and second compression chambers, respectively;

first and second eccentric bushes to rotatably fit over the first and second eccentric cams, respectively, with the first and second rollers fitted over the first and second eccentric bushes, respectively; and

a locking unit to make one of the first and second eccentric bushes be eccentric from the rotating shaft while making a remaining one of the first and second eccentric bushes be released from eccentricity from the rotating shaft, according to a rotating direction of the rotating shaft.

5. The rotary compressor according to claim 4, further comprising:

a cylindrical connecting part to connect the first and second eccentric bushes to each other while the first and second eccentric bushes are eccentric in opposite directions,; and

an eccentric part mounted to the outer surface of the rotating shaft between the first and second eccentric cams to be eccentric from the rotating shaft in a same direction of the first and second eccentric cams.

6. The rotary compressor according to claim 5, wherein the locking unit comprises:

a locking slot provided around the cylindrical connecting part; and

a locking pin mounted to the eccentric part of the rotating shaft to engage with the locking slot.

7. The rotary compressor according to claim 4, further comprising:

a first vane installed between an inlet port and an outlet port of the first compression chamber, to reciprocate in a radial direction while being in contact with an outer surface of the first roller;

a second vane installed between an inlet port and an outlet port of the second compression chamber, to reciprocate in a radial direction while being in contact with an outer surface of the second roller; and

first and second vane springs to bias the first and second vanes, respectively,

wherein the inlet and outlet ports of the first compression chamber are arranged on opposite sides of the first vane, and the inlet and outlet ports of the second compression chamber are arranged on opposite sides of the second vane.

8. The rotary compressor according to claim 7, wherein the outlet ports of the first and second compression chambers communicate with an interior of the hermetic casing through a path defined in the housing.

9. The rotary compressor according to claim 6, wherein the locking pin is mounted to a flat surface of the eccentric part via a screw-type fastening to project from the flat surface of the eccentric part.

10. The rotary compressor according to claim 9, wherein the locking pin engages with the locking slot to make one of the first and second eccentric bushes be eccentric from the rotating shaft, while a remaining one of the first and second eccentric bushes are released from eccentricity from the rotating shaft, according to a rotating direction of the rotating shaft.

11. The rotary compressor according to claim 10, further comprising:

locking parts provided at opposite ends of the locking slot, wherein

when the rotating shaft is rotated while the locking pin mounted to the eccentric part of the rotating shaft engages with the locking slot, the locking pin is rotated within the locking slot to be locked by at least one of the locking parts.

12. The rotary compressor according to claim 11, wherein when the locking pin is locked by at least one of the locking parts of the locking slot, one of the first and second eccentric bushes is eccentric from the rotating shaft and a remaining one of the first and second eccentric bushes is released from eccentricity from the rotating shaft, allowing a compression operation to be executed in one of the first and second compression chambers and an idle operation to be executed in a remaining one of the first and second compression chambers.

13. The rotary compressor according to claim 1, further comprising:

a path control unit to control a refrigerant intake path to make a refrigerant fed from a refrigerant inlet pipe be drawn into an inlet port of the first compression chamber or an inlet port of the second compression chamber.

14. The rotary compressor according to claim 13, wherein the path control unit comprises:

a hollow cylindrical body;

a valve unit installed in the hollow cylindrical body;

an inlet provided at the body, to be connected to the refrigerant inlet pipe;

first and second outlets provided on opposite sides of the body; and

two pipes connected to the inlet port of the first compression chamber and the inlet port of the second compression chamber, respectively, and connected to the first and second outlets, respectively.

15. The rotary compressor according to claim 14, wherein the valve unit comprises:

a valve seat having a cylindrical shape and opened at both ends thereof;

first and second valve members installed on both sides of the hollow cylindrical body, to axially reciprocate in the body to open or close both ends of the valve seat; and

a connecting member to connect the first and second valve member to each other, to allow the first and second valve members to move together.

16. The rotary compressor according to claim 15, wherein when a compression operation is executed in either of the first or second chambers, the first and second valve members set in the hollow cylindrical body move in a direction toward one of the first and second outlets having a lower pressure due to a difference in pressure between the first and second outlets, automatically changing the refrigerant intake path.

17. The rotary compressor according to claim 1, wherein the first roller is rotated while an outside portion of an upper end of the first roller is in contact with the first flange, and the second roller is rotated while an outside portion of a lower end of the second roller is in contact with the second flange, allowing an axial pressure to act on the upper end of the first roller and the lower end of the second roller.

18. A variable capacity rotary compressor, comprising:

a partition plate;

a housing to define first and second compression chambers therein which are partitioned by the partition plate;

first and second flanges mounted to predetermined positions of the first and second compression chambers, to close openings of the first and second compression chambers, respectively;

a rotating shaft to pass through the first and second compression chambers and the partition plate;

first and second eccentric units mounted to the rotating shaft, to be placed in the first and second compression chambers, respectively, one of the first and second eccentric units being eccentric from the rotating shaft to execute a compression operation while a remaining one of the first and second eccentric units is released from eccentricity from the rotating shaft to execute an idle rotation according to a rotating direction of the rotating shaft, the first and second eccentric units being oppositely operated; and

first and second rollers to fit over the first and second eccentric units, respectively, with inside portions of ends of the first and second rollers being spaced apart from inside surfaces of the first and second flanges, respectively, offsetting pressure applied to upper and lower ends of the one of the first and second rollers executing an idle rotation.

19. The rotary compressor according to claim 18, wherein a pressure of an equal magnitude is applied to the upper and lower ends of the one of the first and second rollers executing the idle rotation, so that the pressure applied to the upper end of the roller is offset by the pressure applied to the lower end of the roller, preventing the roller from coming into contact with the first or second flange or being inclined.